

### **Amendments to the Claims:**

This listing of the claims will replace all prior versions, and listing, of claims in the application:

### **Listing of the Claims:**

1. (currently amended): A method of producing an active nickel powder, ~~said method comprising the steps of:~~
  - a) providing a feed material comprising nickel chloride wherein the feed material has comprises a surface area in excess of about  $1 \text{ m}^2/\text{g}$ , ~~preferably between 35 and  $100 \text{ m}^2/\text{g}$ ;~~
  - b) reducing said feed material with a reducing gas at a temperature of at least about  $300^\circ\text{C}[[,]]$ ; and
  - c) recovering the resulting active nickel powder.
2. (currently amended): A method of producing an active nickel powder, ~~said method comprising the steps of:~~
  - a) providing a feed material comprising nickel chloride and other reducible nickel salts, ~~such as nickel carbonate, nickel sulphate and nickel hydroxide~~, wherein the weight ratio of chloride to total nickel is greater than 0.1 and wherein the feed material has comprises a surface area in excess of about  $1 \text{ m}^2/\text{g}$ ; ~~preferably between 35 and  $100 \text{ m}^2/\text{g}$ ;~~
  - b) reducing said feed material with a reducing gas at a temperature of at least about  $300^\circ\text{C}[[,]]$ ; and
  - c) recovering the resulting active nickel powder.
3. (currently amended): A method of producing an active nickel powder, ~~said method comprising the steps of:~~

- a) providing a feed material comprising reducible nickel salts, ~~such as nickel carbonate, nickel sulphate and nickel hydroxide, and optionally nickel chloride,~~ and wherein the feed material has comprises a surface area in excess of about  $1 \text{ m}^2/\text{g}$ , ~~preferably between 35 and 100  $\text{m}^2/\text{g}$ ;~~
  - b) reducing said feed material with a reducing gas at a temperature of at least about  $300^\circ\text{C}$  and concurrently contacting said feed material with HCl gas so as to convert at least a portion of the reducible nickel salts feed material to nickel chloride and wherein the resulting ratio of chloride to total nickel is greater than 0.1[[,]]; and
  - c) recovering the resulting active nickel powder.
4. (currently amended): A method of producing an active nickel powder, ~~said method comprising the steps of:~~
- a) providing a feed material comprising reducible nickel salts, ~~such as nickel carbonate, nickel sulphate and nickel hydroxide, and optionally nickel chloride,~~ mixed with other soluble metal chloride salts, such as  $\text{CrCl}_3$ ,  $\text{FeCl}_3$ ,  $\text{FeCl}_2$ , wherein the weight ratio of chloride to total nickel is greater than 0.1 and wherein the feed material has comprises a surface area in excess of about  $1 \text{ m}^2/\text{g}$ , ~~preferably between 35 and 100  $\text{m}^2/\text{g}$ ;~~
  - b) reducing said feed material with a reducing gas at a temperature of at least about  $300^\circ\text{C}$ , and
  - c) recovering the resulting active nickel powder.
5. (currently amended): A method of producing nickel carbonyl, ~~said method comprising the steps of:~~
- a) providing a feed material comprising nickel chloride wherein the feed material has comprises a surface area in excess of about  $1 \text{ m}^2/\text{g}$ , ~~preferably between 35 and 100  $\text{m}^2/\text{g}$ ;~~

- b) reducing said feed material with a reducing gas at a temperature of at least about 300°C; and
  - c) contacting the resulting active nickel powder with a gas containing carbon monoxide at atmospheric or super atmospheric pressure to obtain nickel carbonyl.
6. (currently amended): A method of producing nickel carbonyl, ~~said method~~ comprising the steps of:
- a) providing a feed material comprising nickel chloride and other reducible nickel salts, ~~such as nickel carbonate, nickel sulphate and nickel hydroxide~~, wherein the weight ratio of chloride to total nickel is greater than 0.1 and wherein the feed material ~~has~~ comprises a surface area in excess of about 1 m<sup>2</sup>/g, ~~preferably between 35 and 100 m<sup>2</sup>/g~~;
  - b) reducing said feed material with a reducing gas at a temperature of at least about 300°C[[,]]; and
  - c) contacting the resulting active nickel powder with a gas containing carbon monoxide at atmospheric or superatmospheric pressure to obtain nickel carbonyl.
7. (currently amended): A method of producing nickel carbonyl, ~~said method~~ comprising the steps of:
- a) providing a feed material comprising reducible nickel salts, ~~such as nickel carbonate, nickel sulphate and nickel hydroxide, and optionally nickel chloride,~~ and wherein the feed material ~~has~~ comprises a surface area in excess of about 1 m<sup>2</sup>/g, ~~preferably between 35 and 100 m<sup>2</sup>/g~~;
  - b) reducing said feed material with a reducing gas at a temperature of at least about 300°C and concurrently contacting said feed material with HCl gas so as to convert at least a portion of the reducible nickel salts feed material to nickel chloride ~~and~~ wherein the resulting ratio of chloride to total nickel is greater than 0.1[[,]]; and

- c) contacting the resulting active nickel powder with a gas containing carbon monoxide at atmospheric or superatmospheric pressure to obtain nickel carbonyl.
8. (currently amended): A method of producing nickel carbonyl, ~~said method~~ comprising the steps of:
  - a) providing a feed material comprising reducible nickel salts, ~~such as nickel carbonate, nickel sulphate and nickel hydroxide, and optionally nickel chloride,~~ mixed with other soluble metal chloride salts, ~~such as CrCl<sub>3</sub>, FeCl<sub>3</sub>, FeCl<sub>2</sub>,~~ wherein the weight ratio of chloride to total nickel is greater than 0.1 and wherein the feed material ~~has~~ comprises a surface area in excess of about 1 m<sup>2</sup>/g, ~~preferably between 35 and 100 m<sup>2</sup>/g;~~
  - b) reducing said feed material with a reducing gas at a temperature of at least about 300°C[,]; and
  - c) contacting the resulting active nickel powder with a gas containing carbon monoxide at atmospheric or superatmospheric pressure to obtain nickel carbonyl.
9. (currently amended): The method of ~~any one of claims 1 to 8~~ claim 1 wherein said reducing step b) is performed at temperatures between 300°C and 600°C.
10. (currently amended): The method of ~~any one of claims 5 to 8~~ claim 5 wherein step c) is performed at temperatures between 20°C and 100°C.
11. (currently amended): The method of ~~any one of claims 1 to 10~~ claim 1 wherein step a) is performed by mixing together dry components.
12. (currently amended): The method of ~~any one of claims 1 to 10~~ claim 1 wherein step a) is performed by wet mixing components and then removing the water by drying.
13. (currently amended): The method of ~~any one of claims 1 to 10~~ claim 1 wherein step a) is performed by wet mixing components in the presence of HCl.

14. (currently amended): The method of ~~any one of claims 1 to 10~~ claim 1 wherein step a) is performed by adding alkali, ~~such as  $\text{Na}_2\text{CO}_3$~~ , to an aqueous solution of reducible nickel salts ~~including nickel chloride~~, and then removing the water by drying.
15. (currently amended): The method of ~~any one of claims 1 to 14~~ claim 1 wherein the reducing gas in step b) ~~contains~~ comprises hydrogen.
16. (currently amended): The method of ~~any one of claims 12 to 15~~ claim 12 wherein the drying portion of steps a) and the reducing portion of step b) are conducted concurrently.
17. (currently amended): The method of ~~any one of claims 12 to 15~~ claim 12 wherein steps a) and b) are conducted sequentially.
18. (currently amended): The method of ~~any one of claims 1 and 5~~ claim 1 wherein in step a), said nickel chloride is in the form of hydrates of nickel, ~~such as  $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$~~ .
19. (currently amended): ~~Method~~ The method ~~according to any one of claims 1 to 18~~ claim 1, wherein ~~if the active nickel powder becomes de-activated due to storage in the absence of oxygen at the end of the process of claims 1 to 4 or after step b) in claims 5 to 8, it is~~ and becomes re-activated by exposing ~~it~~ the active nickel powder to gas containing  $\text{H}_2$  at a temperature of at least about  $150^\circ\text{C}$ .
20. (currently amended): ~~Method~~ The method ~~according to any one of claims 1 to 18~~ claim 19, wherein ~~if the active nickel powder becomes de-activated due to storage in the absence of oxygen, it is~~ re-activated by exposing ~~it~~ the active nickel powder to gas containing  $\text{H}_2$  at a temperature between  $150^\circ\text{C}$  and  $600^\circ\text{C}$ .
21. (currently amended): ~~Method~~ The method ~~according to~~ of claim 1 wherein in step a), the weight ratio of chloride to total nickel is grater than 0.1.

22. (new): The method of claim 1, wherein the feed material comprises a surface area in excess of between 35 and 100 m<sup>2</sup>/g.
23. (new): The method of claim 14 wherein the alkali salt is Na<sub>2</sub>CO<sub>3</sub>.
24. (new): The method of claim 23, wherein the reducible nickel salt is nickel chloride.
25. (new): The method of claim 18, wherein the form of hydrates of nickel is NiCl<sub>2</sub> 6H<sub>2</sub>O.
26. (new): The method of claim 2, wherein the reducible nickel salt is selected from the group consisting of nickel carbonate, nickel sulfate, and nickel hydroxide.
27. (new): The method of claim 2, wherein the feed material comprises a surface area in excess of between 35 and 100 m<sup>2</sup>/g.
28. (new): The method of claim 2 wherein said reducing step b) is performed at temperatures between 300°C and 600°C.
29. (new): The method of claim 2 wherein step a) is performed by mixing together dry components.
30. (new): The method of claim 2 wherein step a) is performed by wet mixing components and then removing the water by drying.
31. (new): The method of claim 2 wherein step a) is performed by wet mixing components in the presence of HCl.
32. (new): The method of claim 2 wherein step a) is performed by adding alkali to an aqueous solution of reducible nickel salt and then removing the water by drying.
33. (new): The method of claim 2 wherein the reducing gas in step b) comprises hydrogen.

34. (new): The method of claim 2 wherein in step a), said nickel chloride is in the form of hydrates of nickel.
35. (new): The method of claim 34, wherein the form of hydrates of nickel is  $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ .
36. (new): The method of claim 2, wherein the active nickel powder becomes de-activated due to storage in the absence of oxygen, and becomes re-activated by exposing the active nickel powder to gas containing  $\text{H}_2$  at a temperature of at least about  $150^\circ\text{C}$ .
37. (new): The method of claim 3, wherein the reducible nickel salt is selected from the group consisting of nickel carbonate, nickel sulfate, nickel hydroxide, and nickel chloride.
38. (new): The method of claim 3, wherein the feed material comprises a surface area in excess of between 35 and  $100 \text{ m}^2/\text{g}$ .
39. (new): The method of claim 3 wherein said reducing step b) is performed at temperatures between  $300^\circ\text{C}$  and  $600^\circ\text{C}$ .
40. (new): The method of claim 3 wherein step a) is performed by mixing together dry components.
41. (new): The method of claim 3 wherein step a) is performed by wet mixing components and then removing the water by drying.
42. (new): The method of claim 3 wherein step a) is performed by wet mixing components in the presence of  $\text{HCl}$ .
43. (new): The method of claim 3 wherein step a) is performed by adding alkali to an aqueous solution of reducible nickel salt and then removing the water by drying.

44. (new): The method of claim 3 wherein the reducing gas in step b) comprises hydrogen.
45. (new): The method of claim 3, wherein the active nickel powder becomes de-activated due to storage in the absence of oxygen, and becomes re-activated by exposing the active nickel powder to gas containing H<sub>2</sub> at a temperature of at least about 150°C.
46. (new): The method of claim 4, wherein the reducible nickel salt is selected from the group consisting of nickel carbonate, nickel sulfate, nickel hydroxide, and nickel chloride.
47. (new): The method of claim 4, wherein the feed material comprises a surface area in excess of between 35 and 100 m<sup>2</sup>/g.
49. (new): The method of claim 4 wherein said reducing step b) is performed at temperatures between 300°C and 600°C.
50. (new): The method of claim 4 wherein step a) is performed by mixing together dry components.
51. (new): The method of claim 4 wherein step a) is performed by wet mixing components and then removing the water by drying.
52. (new): The method of claim 4 wherein step a) is performed by wet mixing components in the presence of HCl.
53. (new): The method of claim 4 wherein step a) is performed by adding alkali to an aqueous solution of reducible nickel salt and then removing the water by drying.
54. (new): The method of claim 4 wherein the reducing gas in step b) comprises hydrogen.



55. (new): The method of claim 4, wherein the active nickel powder becomes de-activated due to storage in the absence of oxygen, and becomes re-activated by exposing the active nickel powder to gas containing  $H_2$  at a temperature of at least about 150°C.
56. (new): The method of claim 5, wherein the feed material comprises a surface area in excess of between 35 and 100  $m^2/g$ .
57. (new): The method of claim 5 wherein said reducing step b) is performed at temperatures between 300°C and 600°C.
58. (new): The method of claim 5 wherein step a) is performed by mixing together dry components.
59. (new): The method of claim 5 wherein step a) is performed by wet mixing components and then removing the water by drying.
60. (new): The method of claim 5 wherein step a) is performed by wet mixing components in the presence of HCl.
61. (new): The method of claim 5 wherein step a) is performed by adding alkali to an aqueous solution of reducible nickel salt and then removing the water by drying.
62. (new): The method of claim 5 wherein the reducing gas in step b) comprises hydrogen.
63. (new): The method of claim 5 wherein in step a), said nickel chloride is in the form of hydrates of nickel.
64. (new): The method of claim 63, wherein the form of hydrates of nickel is  $NiCl_2 \cdot 6H_2O$ .

65. (new): The method of claim 5, wherein the active nickel powder becomes de-activated due to storage in the absence of oxygen, and becomes re-activated by exposing the active nickel powder to gas containing H<sub>2</sub> at a temperature of at least about 150°C.
66. (new): The method of claim 6, wherein the reducible nickel salt is selected from the group consisting of nickel carbonate, nickel sulfate, and nickel hydroxide.
67. (new): The method of claim 6, wherein the feed material comprises a surface area in excess of between 35 and 100 m<sup>2</sup>/g.
68. (new): The method of claim 6 wherein said reducing step b) is performed at temperatures between 300°C and 600°C.
69. (new): The method of claim 6 wherein step a) is performed by mixing together dry components.
70. (new): The method of claim 6 wherein step a) is performed by wet mixing components and then removing the water by drying.
71. (new): The method of claim 6 wherein step a) is performed by wet mixing components in the presence of HCl.
72. (new): The method of claim 6 wherein step a) is performed by adding alkali to an aqueous solution of reducible nickel salt and then removing the water by drying.
73. (new): The method of claim 6 wherein the reducing gas in step b) comprises hydrogen.
74. (new): The method of claim 6 wherein in step a), said nickel chloride is in the form of hydrates of nickel.
75. (new): The method of claim 74, wherein the form of hydrates of nickel is NiCl<sub>2</sub> 6H<sub>2</sub>O.

76. (new): The method of claim 6, wherein the active nickel powder becomes de-activated due to storage in the absence of oxygen, and becomes re-activated by exposing the active nickel powder to gas containing  $H_2$  at a temperature of at least about 150°C.
77. (new): The method of claim 7, wherein the reducible nickel salt is selected from the group consisting of nickel carbonate, nickel sulfate, nickel hydroxide, and nickel chloride.
78. (new): The method of claim 7, wherein the feed material comprises a surface area in excess of between 35 and 100 m<sup>2</sup>/g.
79. (new): The method of claim 7 wherein said reducing step b) is performed at temperatures between 300°C and 600°C.
80. (new): The method of claim 7 wherein step a) is performed by mixing together dry components.
81. (new): The method of claim 7 wherein step a) is performed by wet mixing components and then removing the water by drying.
82. (new): The method of claim 7 wherein step a) is performed by wet mixing components in the presence of HCl.
83. (new): The method of claim 7 wherein step a) is performed by adding alkali to an aqueous solution of reducible nickel salt and then removing the water by drying.
84. (new): The method of claim 7 wherein the reducing gas in step b) comprises hydrogen.

85. (new): The method of claim 7, wherein the active nickel powder becomes de-activated due to storage in the absence of oxygen, and becomes re-activated by exposing the active nickel powder to gas containing  $H_2$  at a temperature of at least about  $150^{\circ}C$ .
86. (new): The method of claim 8, wherein the reducible nickel salt is selected from the group consisting of nickel carbonate, nickel sulfate, nickel hydroxide, and nickel chloride.
88. (new): The method of claim 8, wherein the feed material comprises a surface area in excess of between 35 and  $100\text{ m}^2/\text{g}$ .
89. (new): The method of claim 8 wherein said reducing step b) is performed at temperatures between  $300^{\circ}C$  and  $600^{\circ}C$ .
90. (new): The method of claim 8 wherein step a) is performed by mixing together dry components.
91. (new): The method of claim 8 wherein step a) is performed by wet mixing components and then removing the water by drying.
92. (new): The method of claim 8 wherein step a) is performed by wet mixing components in the presence of  $HCl$ .
93. (new): The method of claim 8 wherein step a) is performed by adding alkali to an aqueous solution of reducible nickel salt and then removing the water by drying.
94. (new): The method of claim 8 wherein the reducing gas in step b) comprises hydrogen.
95. (new): The method of claim 8, wherein the active nickel powder becomes de-activated due to storage in the absence of oxygen, and becomes re-activated by exposing the active nickel powder to gas containing  $H_2$  at a temperature of at least about  $150^{\circ}C$ .

96. (new): The method of claim 8, wherein the soluble metal chloride salt is selected from the group consisting of  $\text{CrCl}_3$ ,  $\text{FeCl}_3$ , and  $\text{FeCl}_2$ .